[c5]

## Claims

[c1]	1. A method for modeling electric arc behavior, said method comprising the
	steps of:
	determining electrical conductivity distribution in an arc;
	determining a current density distribution of the arc based on the
	determined electrical conductivity.

- [c2] 2. A method according to Claim 1 wherein electrical conductivity distribution in the arc is determined using temperature and pressure distribution with an arc chamber.
- [c3] 3. A method according to Claim 1 wherein determining current density distribution comprises the step of determining electrical potential of the arc.
- [c4] 4. A method according to Claim 1 further comprising the steps of:
  determining magnetic fields and Joule heating using the determined current
  density distribution; and
  determining magnetic forces from the determined magnetic fields.
  - 5. A method according to Claim 4 further comprising the step of determining gas dynamics field using the determined Joule heating and magnetic forces.
- [c6] 6. A system for modeling electric arc behavior, said system comprising:
  a server computer;
  a first client computer coupled to said server computer, said first client
  computer programmed to determine electrical conductivity distribution in an
  arc; and
  a second client computer coupled to said server computer, said second client
  computer programmed to determine a current density distribution of the arc
  based on the determined electrical conductivity distribution.
- [c7] 7. A system according to Claim 5 wherein said first client computer is programmed to determine electrical conductivity distribution in the arc using temperature and pressure distribution with an arc chamber.

- [c8] 8. A system according to Claim 5 wherein said second client computer is programmed to determine electrical potential of the arc.
- [c9] 9. A system according to Claim 5 wherein said second client computer is further programmed to determine magnetic fields and Joule heating using the determined current density distribution, and magnetic forces from the determined magnetic fields.
- [c10] 10. A system according to Claim 9 wherein said second client computer is further programmed to determine gas dynamics field using the determined Joule heating and magnetic forces.